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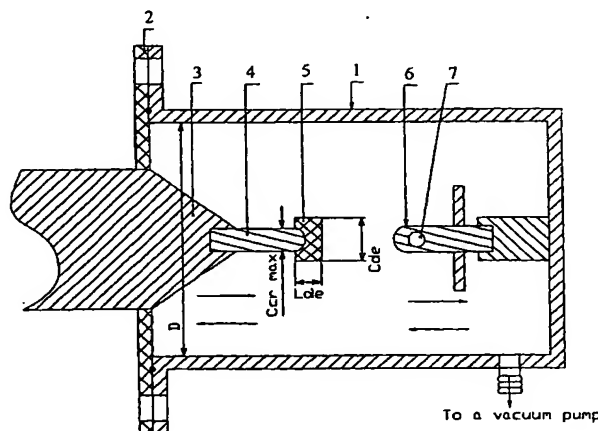
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(54) Title: METHOD AND DEVICE FOR COMPRESSING A SUBSTANCE BY IMPACT AND PLASMA CATHODE  
THERETO



(57) Abstract: A method of compressing a substance by impact in axisymmetric relativistic vacuum diodes (RVD) having a plasma cathode and an anode-enhancer including: producing an axisymmetric target of a condensed substance, which functions at least as a part of the anode-enhancer; axially placing said electrodes; and pulse discharge of a power source via the RVD. To compress a substantial portion of the target substance to a superdense state, a plasma cathode is used in the form of a current-conducting rod comprising a dielectric end element having the perimeter of the rear end embracing the perimeter of the rod in the plane perpendicular to the axis of symmetry with a continuous gap, and the area of the emitting surface being greater than the maximum cross-section area of the anode-enhancer; the anode-enhancer is placed towards the plasma cathode so that the center of curvature of the working surface of the anode enhancer is located inside the focal space of the collectively self focussing electron beam; and the anode-enhancer is acted upon by an electron beam with an electron energy not smaller than 0.2 MeV, current density not smaller than 10<sup>6</sup> A/cm<sup>2</sup> and duration not greater than 100 ns.

WO 2004/017685 A1